

FIG. 1A

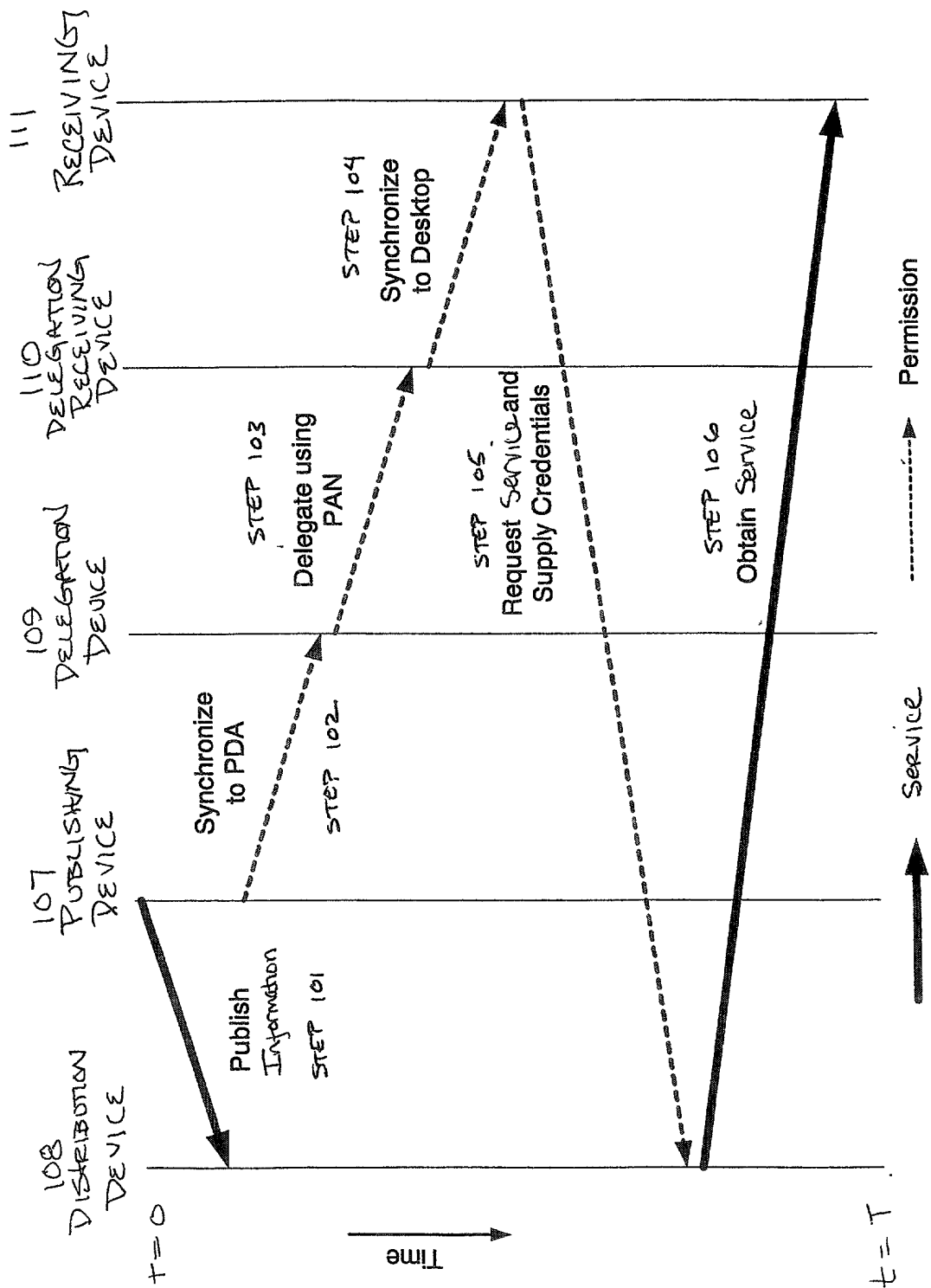
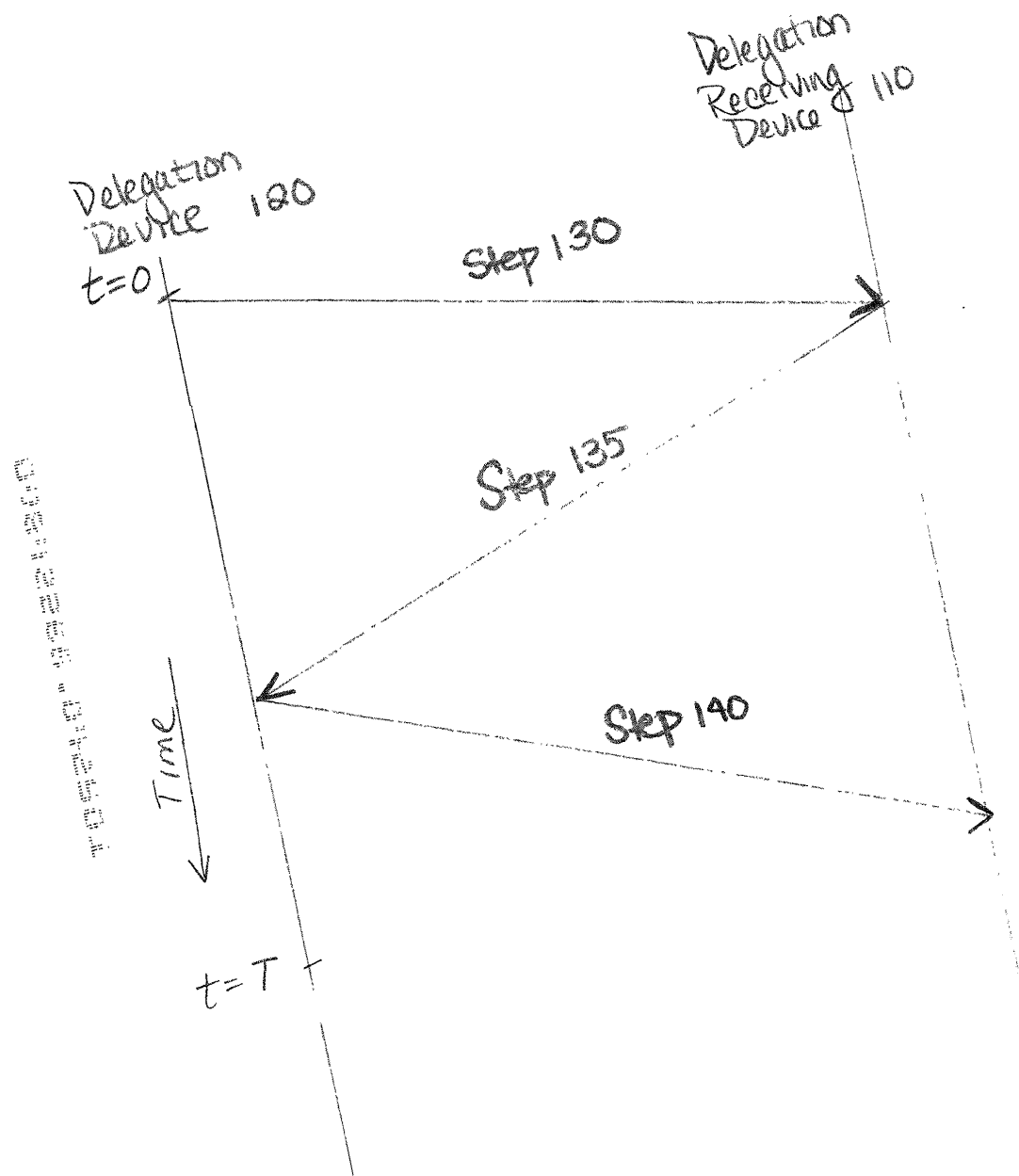


FIG. 1B



Data Structure Definitions in ASN.1

permissionChain ::= SEQUENCE OF permissionLink

permissionLink ::= SEQUENCE {
permissionLinkComponent permissionLinkComponent,
Signature OCTET STRING
}

permissionLinkComponent ::= SEQUENCE {
Name OCTET STRING,
Uri OCTET STRING,
Description OCTET STRING,
Note OCTET STRING,
Version INTEGER,
Src_p INTEGER,
Src_q INTEGER,
Src_g INTEGER,
Src_pub INTEGER,
Src_x509cert OCTET STRING,
Src_email OCTET STRING,
Subj_p INTEGER,
Subj_q INTEGER,
Subj_g INTEGER,
Subj_pub INTEGER,
Subj_x509cert OCTET STRING,
Subj_email OCTET STRING,
Delegate BOOLEAN,
Read BOOLEAN,
Write BOOLEAN,
validFrom GeneralizedTime,
validTo GeneralizedTime
}

FIG. 1C

1. The first step is to identify the data source. 2. The second step is to identify the data type. 3. The third step is to identify the data format. 4. The fourth step is to identify the data content. 5. The fifth step is to identify the data location. 6. The sixth step is to identify the data owner. 7. The seventh step is to identify the data user. 8. The eighth step is to identify the data access. 9. The ninth step is to identify the data security. 10. The tenth step is to identify the data privacy. 11. The eleventh step is to identify the data integrity. 12. The twelfth step is to identify the data availability. 13. The thirteenth step is to identify the data reliability. 14. The fourteenth step is to identify the data accuracy. 15. The fifteenth step is to identify the data consistency. 16. The sixteenth step is to identify the data completeness. 17. The seventeenth step is to identify the data timeliness. 18. The eighteenth step is to identify the data relevance. 19. The nineteenth step is to identify the data validity. 20. The twentieth step is to identify the data veracity. 21. The twenty-first step is to identify the data trustworthiness. 22. The twenty-second step is to identify the data credibility. 23. The twenty-third step is to identify the data believability. 24. The twenty-fourth step is to identify the data acceptability. 25. The twenty-fifth step is to identify the data appropriateness. 26. The twenty-sixth step is to identify the data suitability. 27. The twenty-seventh step is to identify the data feasibility. 28. The twenty-eighth step is to identify the data desirability. 29. The twenty-ninth step is to identify the data desirability. 30. The thirtieth step is to identify the data desirability.

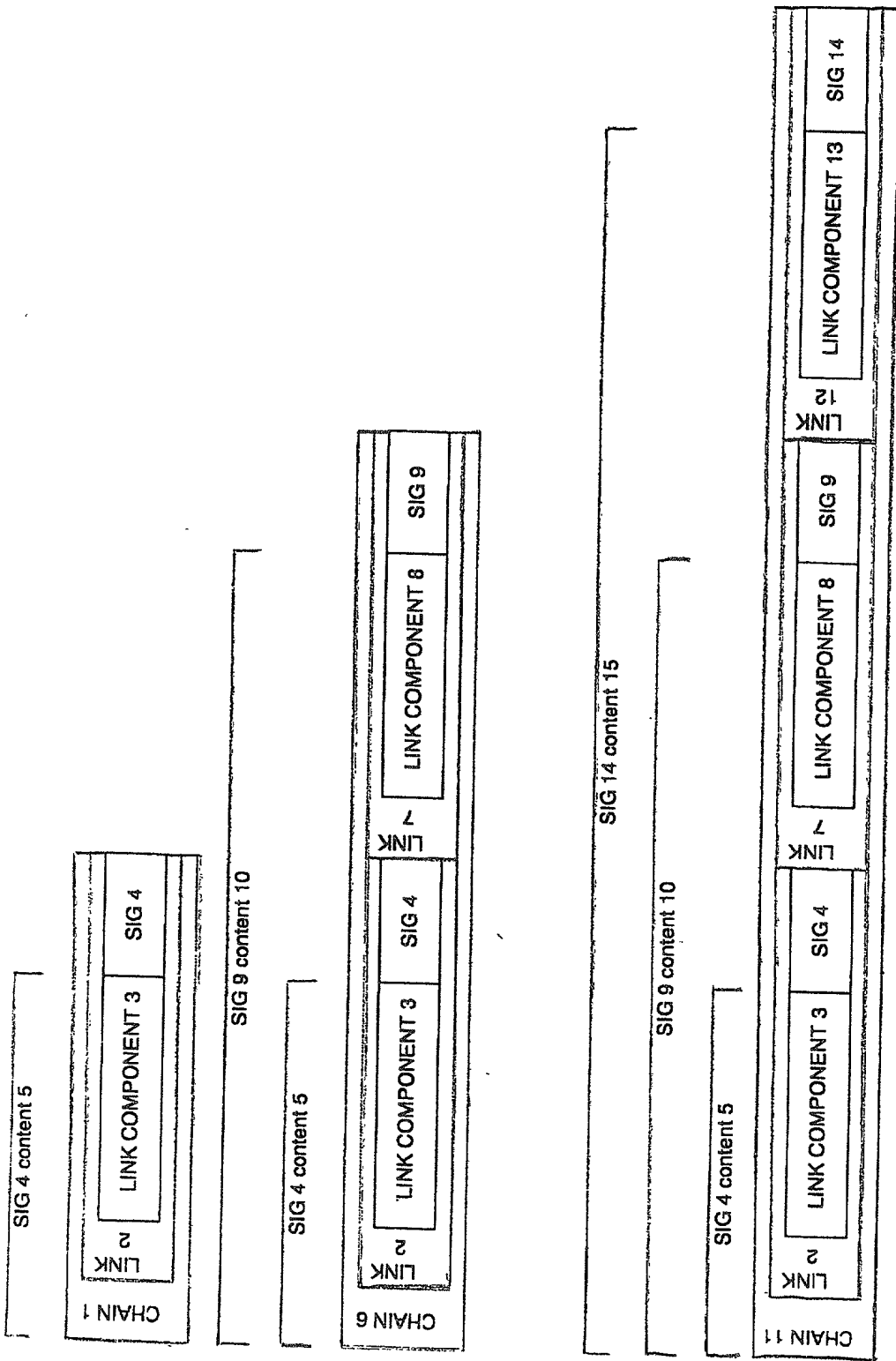


FIG. 1D

System Overview

FIG. 2A

200

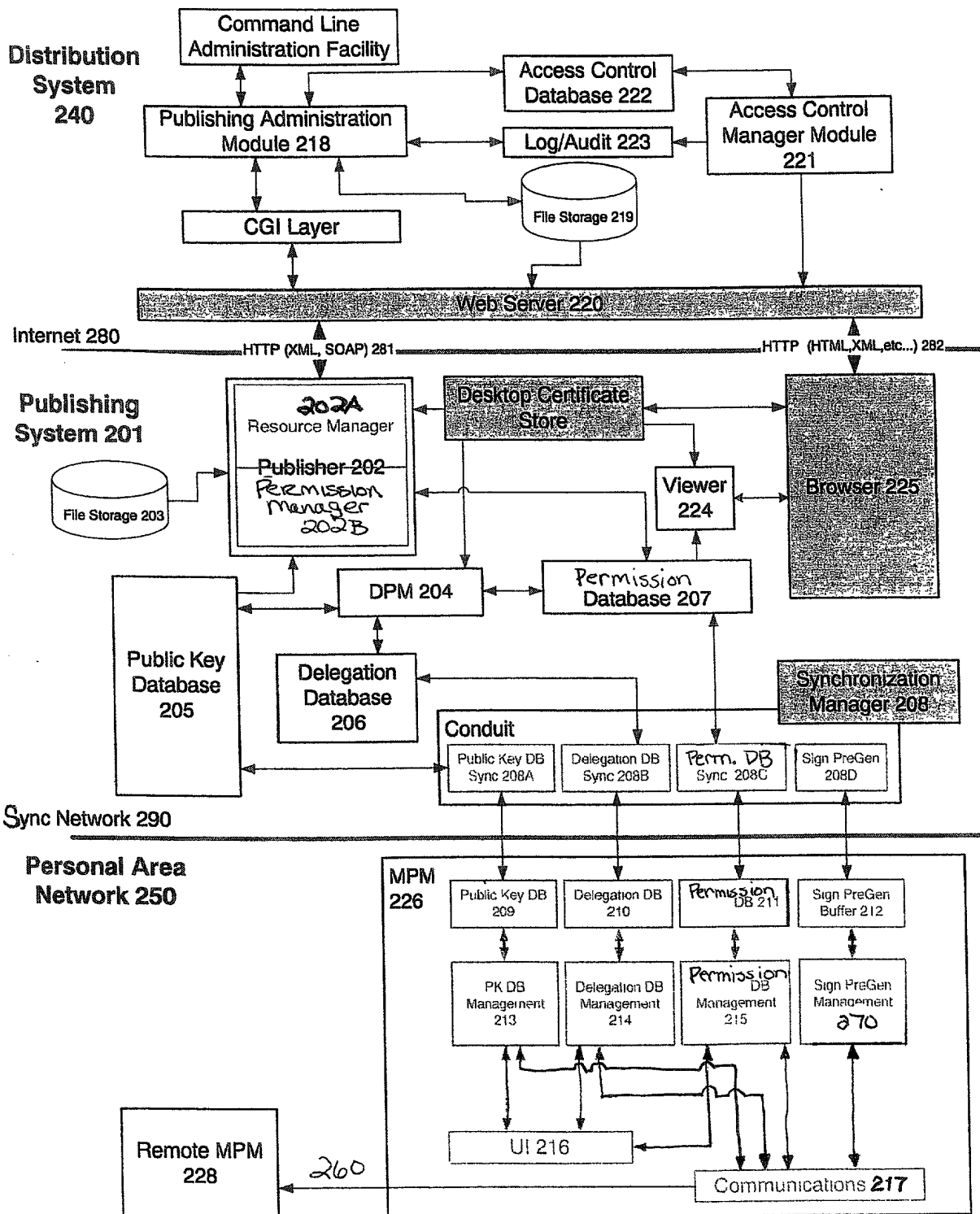


FIG. 2B

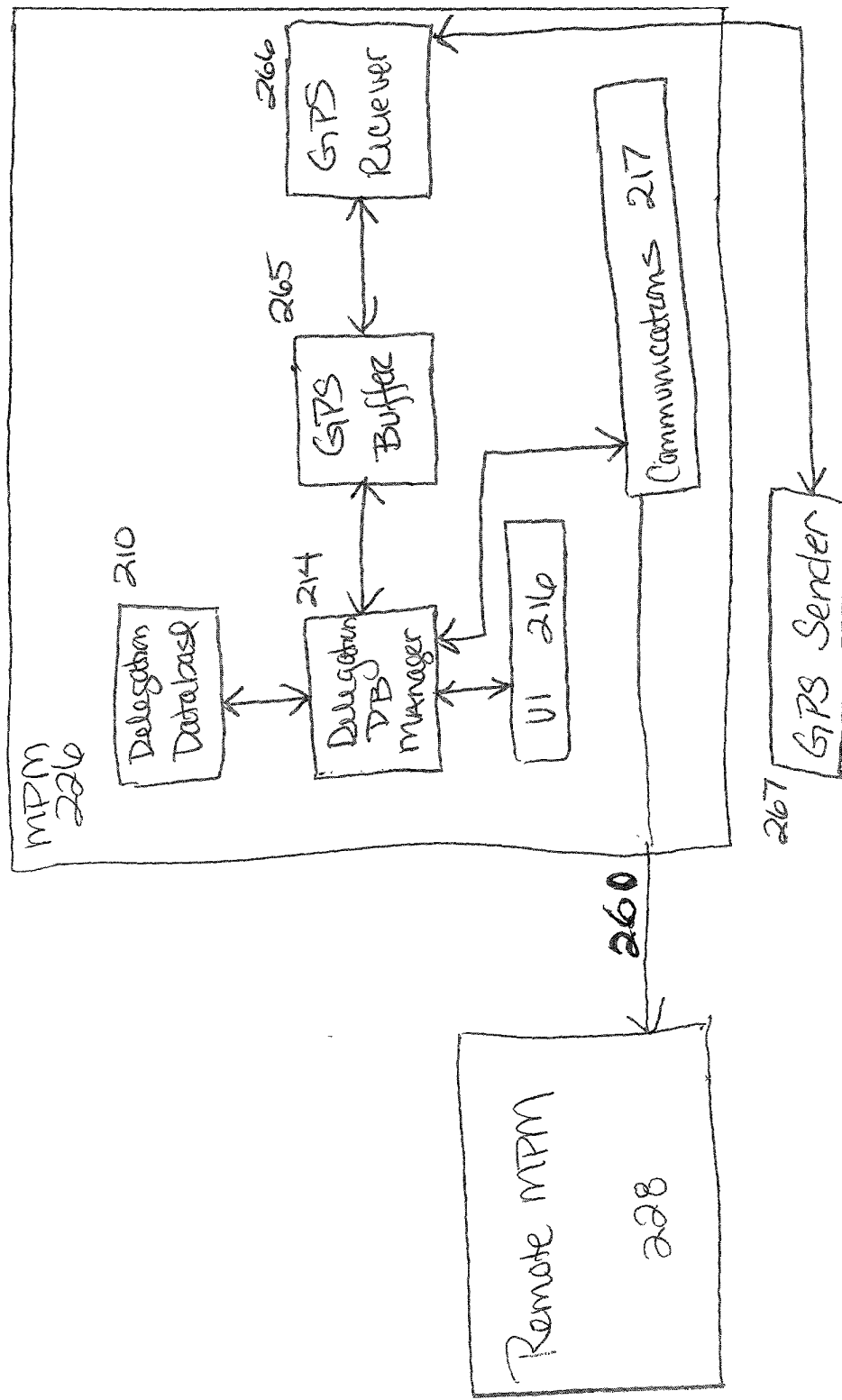
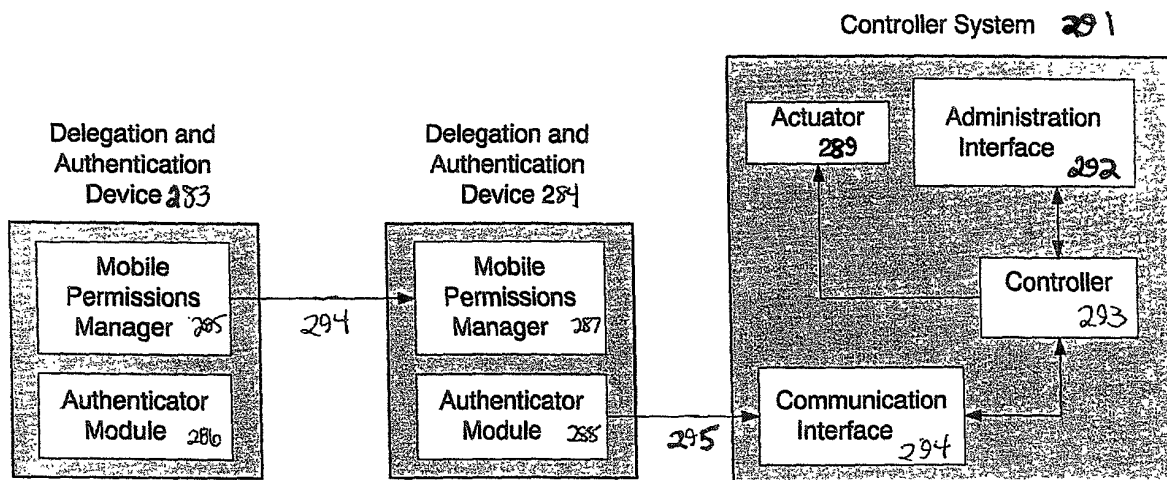


FIG. 2C



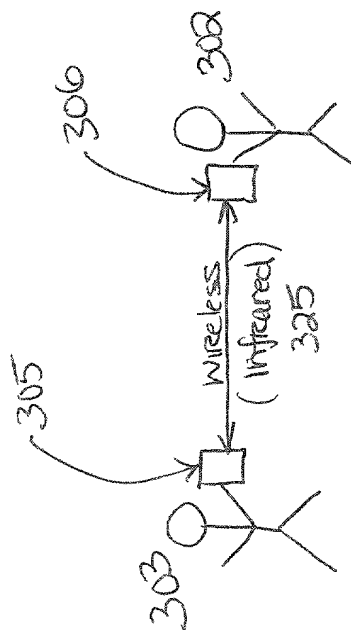
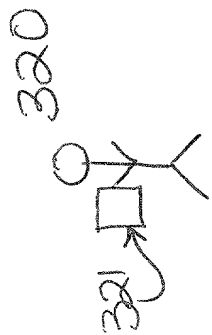


Fig. 3A

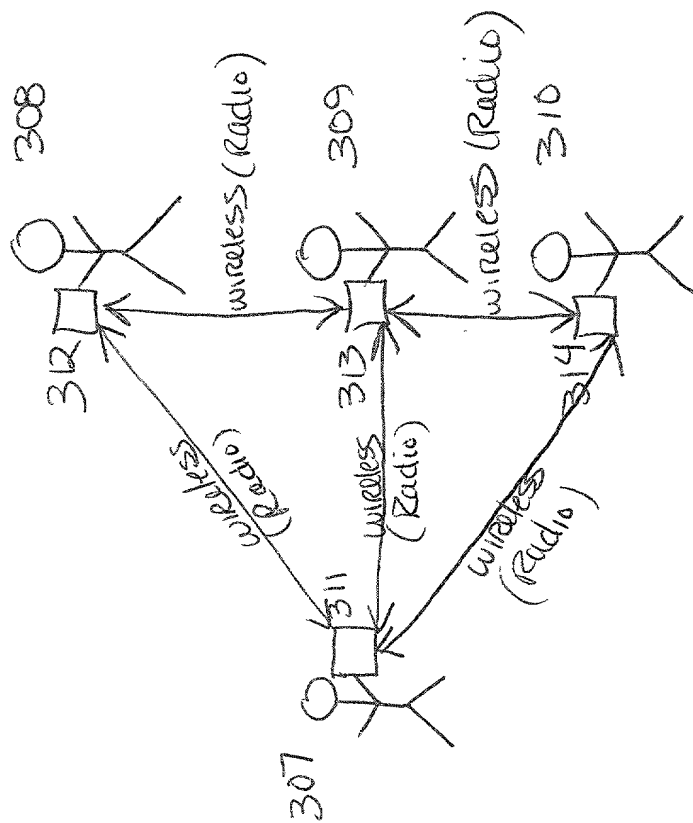


Fig. 3B

FIG. 4

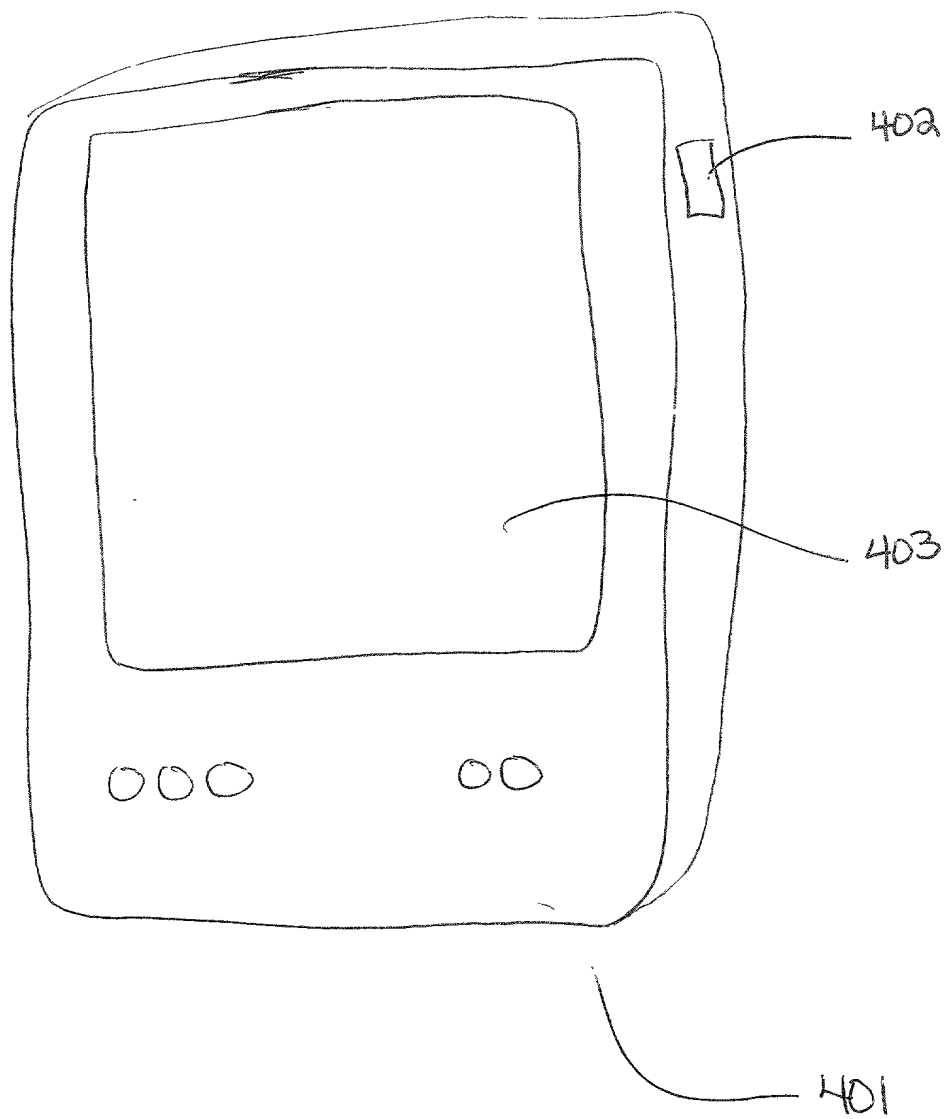


FIG. 5

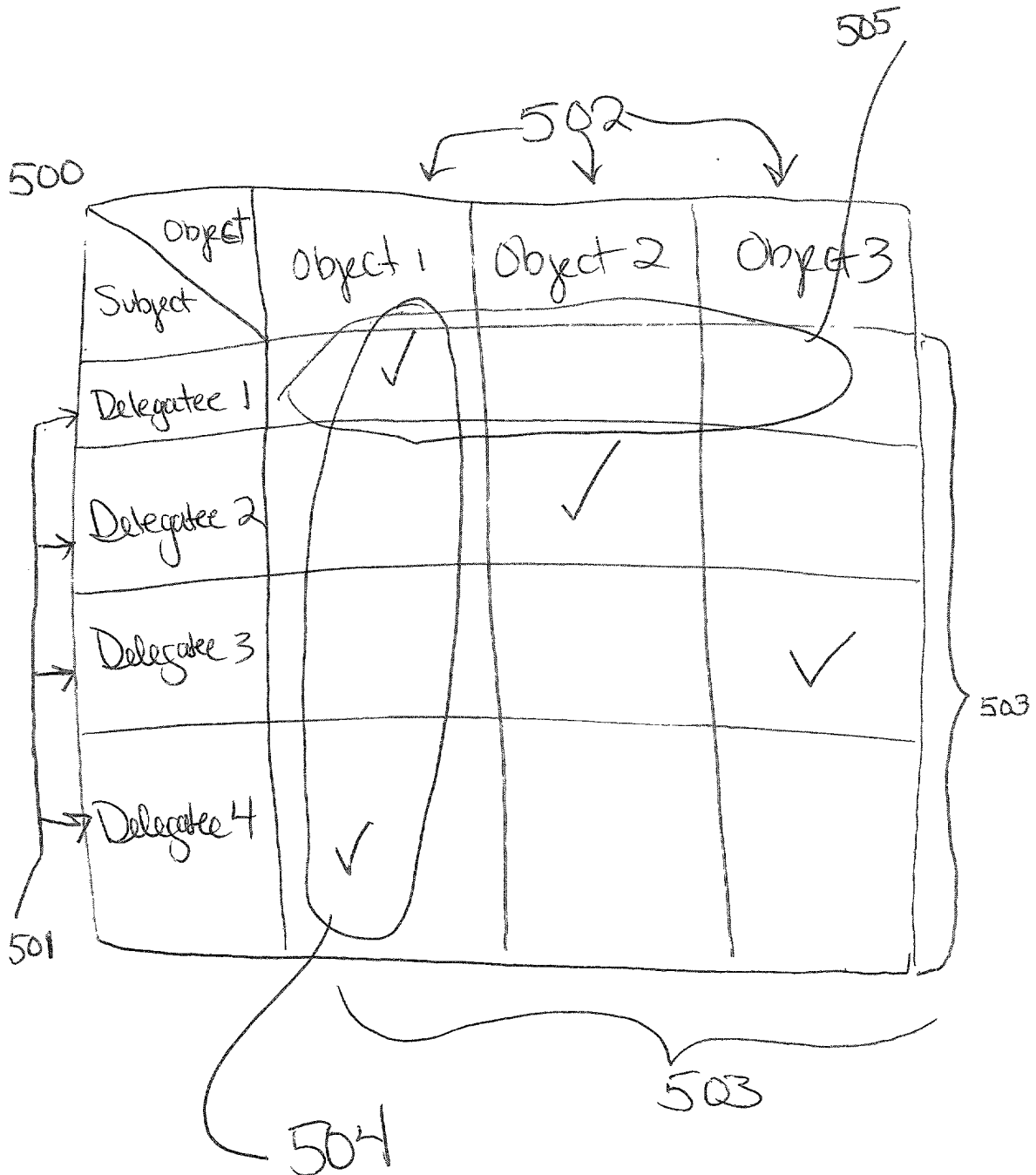
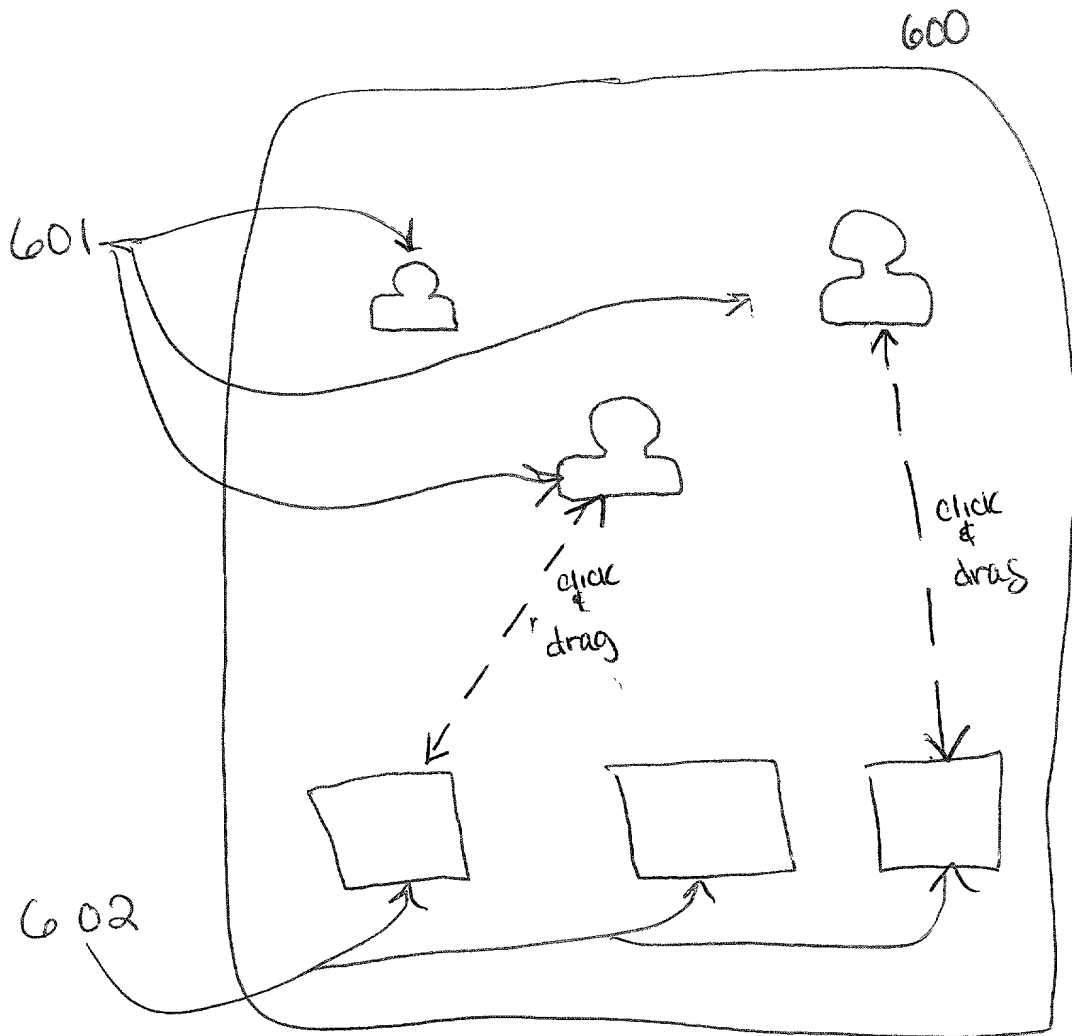


Fig. 4



Sending Permission as part of a header within an HTTP request.
(See <http://www.ietf.org/rfc/rfc2616.txt>).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Vchain: 50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNglg+cwEOzzjT+
v8ywbpyuugQvjluZSSVDFkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mLOnRKRxW
WuX6gW3gr76zVuIz0ylws9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH81046kLpiXB+O
CloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkJx4wlA0d9GdGAqRycOGFoXtyzps
+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVgwnqJemvVUrHlDdhnMzYzF
ZfTqeZ6sYAZCvsAiCYghRB6fk9JJV/vj9CzFlvfyFPfYYH75ONHjMdDr5qrVbSm4hK2GFZ
IVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWgrIzL+jw
LelCfDk2V4SntsK+CFxBVGBU6dWpQYe2x0Bjat5yjbgyfXdz/vXfNxjHoAiUYwt4ZNwK0+
UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DUtE6JhrX6U
fr08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3Vl1lbxTyofETq9WofZ3u+bomL8WgchTd
/QPyHMaky37tXEhrjZxUkgJtI0oAl2kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP78DSOQwC
HMolJQPmjfaOxaCR5we9mhJGHjtTOpXx3GkLNlNuZyq7tbxYznGNJ2VgwUPpCQppohcWmF
B1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiIEJmtzil
lDpnt0phJpCDAPyM2XO2bJGrPnimSbUsaELQWdMmtUyczy5TDI1pqjKMNUlytlHdmN2jly
2+hHplkzgxXKhilI/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5sNs1TzWChjYhtFlMuCezT
UmflLBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwtpJpJHJ+Sia
/hkB9+alMZxfSkMQaBpAE7/BfzRHs+09fDTL+kBfd00w0fvkTo9AlfVF99wiAJ0hZt7q+e
GWkPi5SRO+9/T710r7wNvc9NELRfsziq/v+8LM179yjjCm0chAZTv09ia8i28gQotzjdFX
1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8hHDxgluK
RaAF1xQboHeRlZ9GQHoia9ucQORhrbIu0S20Afj99QjmszP3gQ64Pw+EakfS+1YQYbauY9
Z+8bRf+G8JnhRZlvcyu5ylRW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtzUR4rv+e
qjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
```

...

FIG. 7.

Sending the permission as part of a "cookie" within an HTTP request
(see <http://www.ietf.org/rfc/rfc2616.txt> and <http://www.ietf.org/rfc/rfc2109.txt>).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Cookie: Vchain=50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNq1g+cw
EOzzjT+v8ywbpyuugQvj1uZSSVDfkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mL
OnRKRxWuX6gW3gR76zVuIz0ylwS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046k
LpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkJx4wlA0d9GdGAqRycOGF
oXtyzps+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVgwnqJemvVUrHlDD
hnMzYzFZftTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyFPfYYH75ONHjMdr5qrVbSm
4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWg
rIzL+jwLe1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbgyfXdz/vXfNxiHoAiUYwt
4ZNwK0+UG78+E1rtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00cl6a4M82DutE
6JhrX6UfR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lBxTyofETq9WofZ3u+bomL
8WgchTd/QPyHMaky37tXEhrjZxUkgJtI0oAl2kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP7
8DSOQwCHMolJQPmjfaOxaCR5wE9mhJGHjtT0pXx3GkLNlNuZYq7tbxYznGNJ2VgwUPpCQp
pohcWmFB1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiI
EJmtzil1Dpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TDI1pqjKMNUlyt1H
dmN2jly2+hHplkzgxXKHi1I/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5sNs1TzWChjYhtF
lMuCezTUmflLBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwPJP
JHJ+SIa/hkB9+alMZXfSkMQaBPAE7/BfzRHs+09fDTL+kBFdO0w0fvkTo9AlfVF99wiAJ0
hZt7q+eGwKPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv09iA8i28gQ
otzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8h
HDxgluKRaf1xQboHer1Z9GQHoia9ucQORhrbIu0S20Afj99QjmszP3gQ64Pw+EakfS+1Y
QYbauY9Z+8bRf+G8JnhRZIVcyu5y1RW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtz
UR4rv+eqjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
...
```

FIG. 8

Sending the permission as part of a URL

http://www.websitexyz.com/resource/?Vchain=50U+F61olMMJzRmZs6QNRhxlUE3a
rtX4ax56AJdJxYR7dzyPNglg+cwEOzzjT+v8ywbpyuugQvjluZSSVdfkbje/C+NV8sLfp5d
3eaTykzeP+siJxl7wg3njzn2mLOnRKrXwWuX6gW3gR76zVuIz0ylwS9bZzSiu+ImN/SaHRS
3eqBFPL7Ye0lJzin4jH8l046kLpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybf
SXPKJx4wlA0d9GDGAqRycOGFoXtyzps+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPv
uevICZHVgwnqJemvVUrH1DDhnMzYzFZftTgeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzFlvfyF
PfYYH75ONHjMdDr5qrVbSm4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3
hpKa5Pd+NZELIwQ4FWlWgrIzL+jwLe1CfDk2V4SntsK+CFxBVGBU6dWpQYe2x0Bjat5yjbq
YfXdz/vXfNxjHoAiUYwt4ZNwK0+UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10
FeCHZ00c16a4M82DUtE6JhrX6UfR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lBxT
yofETq9WofZ3u+bomL8WgchTd/QPyHMAky37tXEhrjZxUkgJtI0oAl2kVaTDERIwBnhQYM3
mzp48n8wCq8qH2JP78DSOQwCHMolJQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLNLNuZYq7tbx
YznGNJ2VgwUPpCQppohcWmFB1779OcTc59zt9kV6A3MyeI/lZCP5iW+vJPEa6h5CWhqHDT3
mvDXSAJ8Wx66XiIEJmtzil1Dpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TD
IlpqjKMNUlytlHdmN2jly2+hHplkzgxXKhilI/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5s
Ns1TzWChjYhtFlMuCezTUmfl1LBgGPgh6Uv3oyUVOasRmsKi6qbgweDdxXfZD3uFR/iJNLUz
wnt3/PJwtpJpJHJ+Sia/hkB9+alMZxfSkMQaBpAE7/BfzRHs+09fDTL+kBFd00w0fvkTo9A
lfVF99wiAJ0hZt7q+eGWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv
09ia8i28gQotzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a
75Jxyoa8hHDxgluKRaf1xQboHeRlZ9GQHoia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+
EakfS+lyQYbauY9Z+8bRf+G8JnhRZIVcyu5ylRW74goguqs6BSf6NcuC3rBJhf30xn151/a
8SraFtzUR4rv+eqjQyE=

Fig. 9

Fig. 10

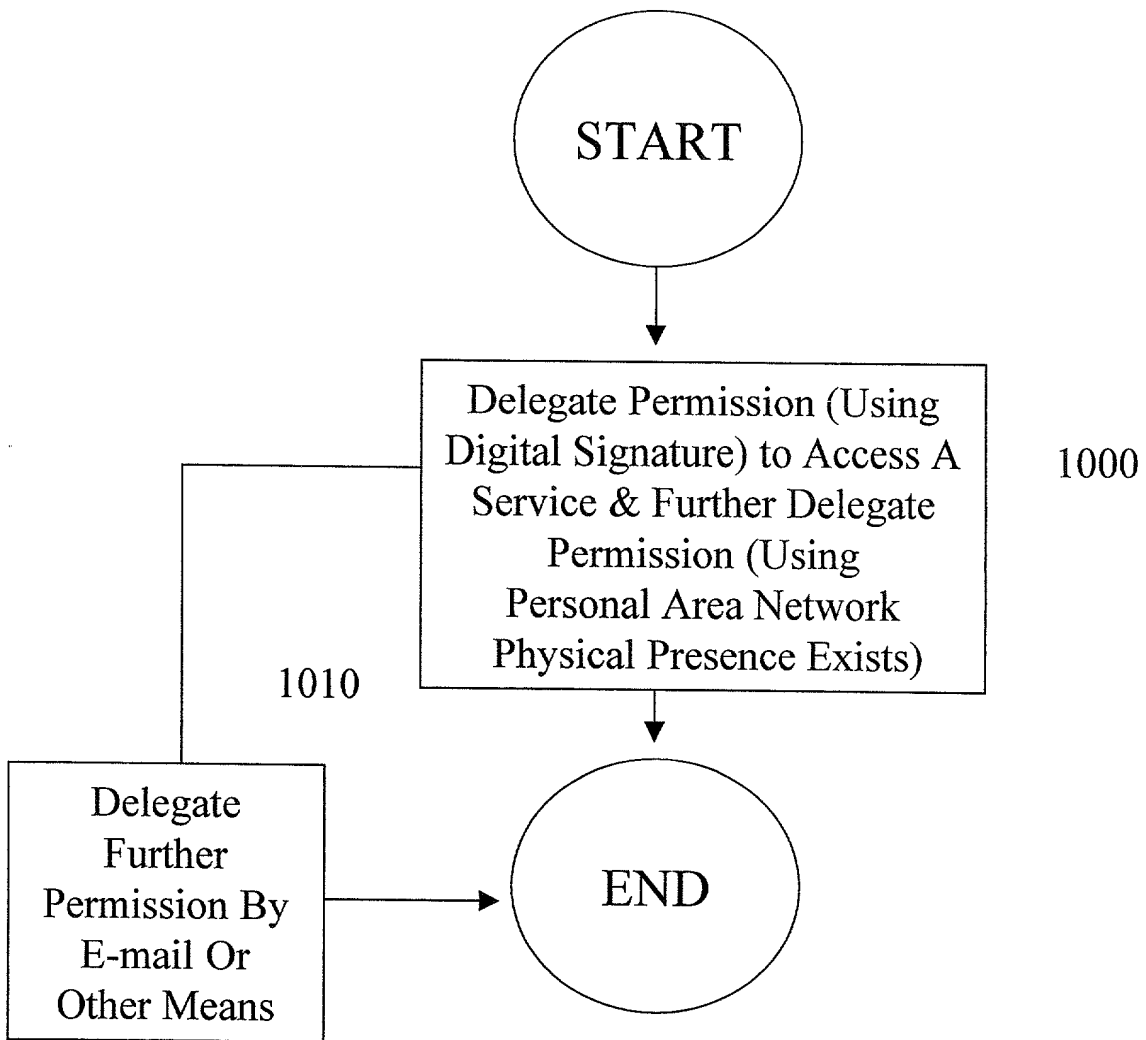


Fig. 11

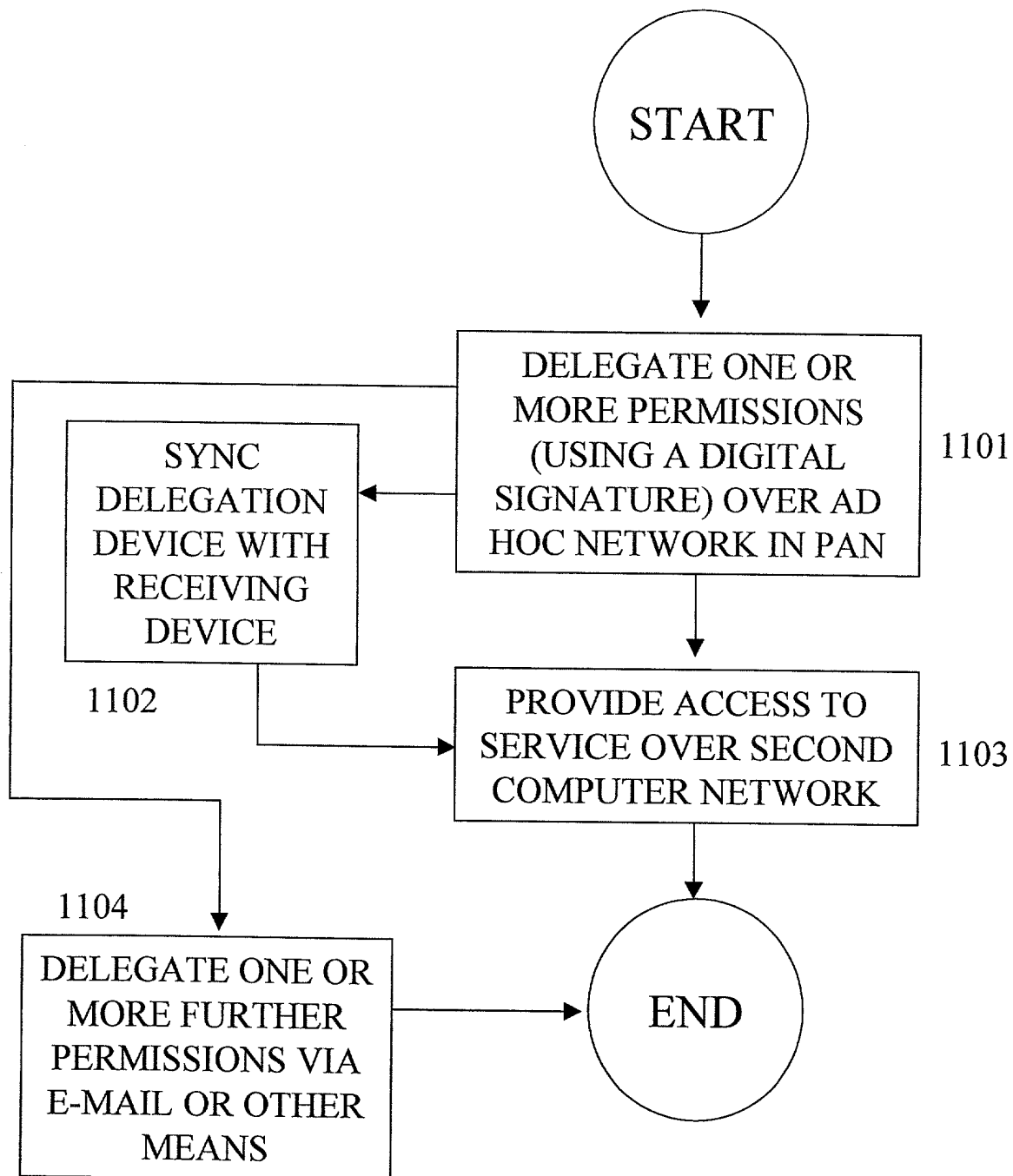


Fig. 12

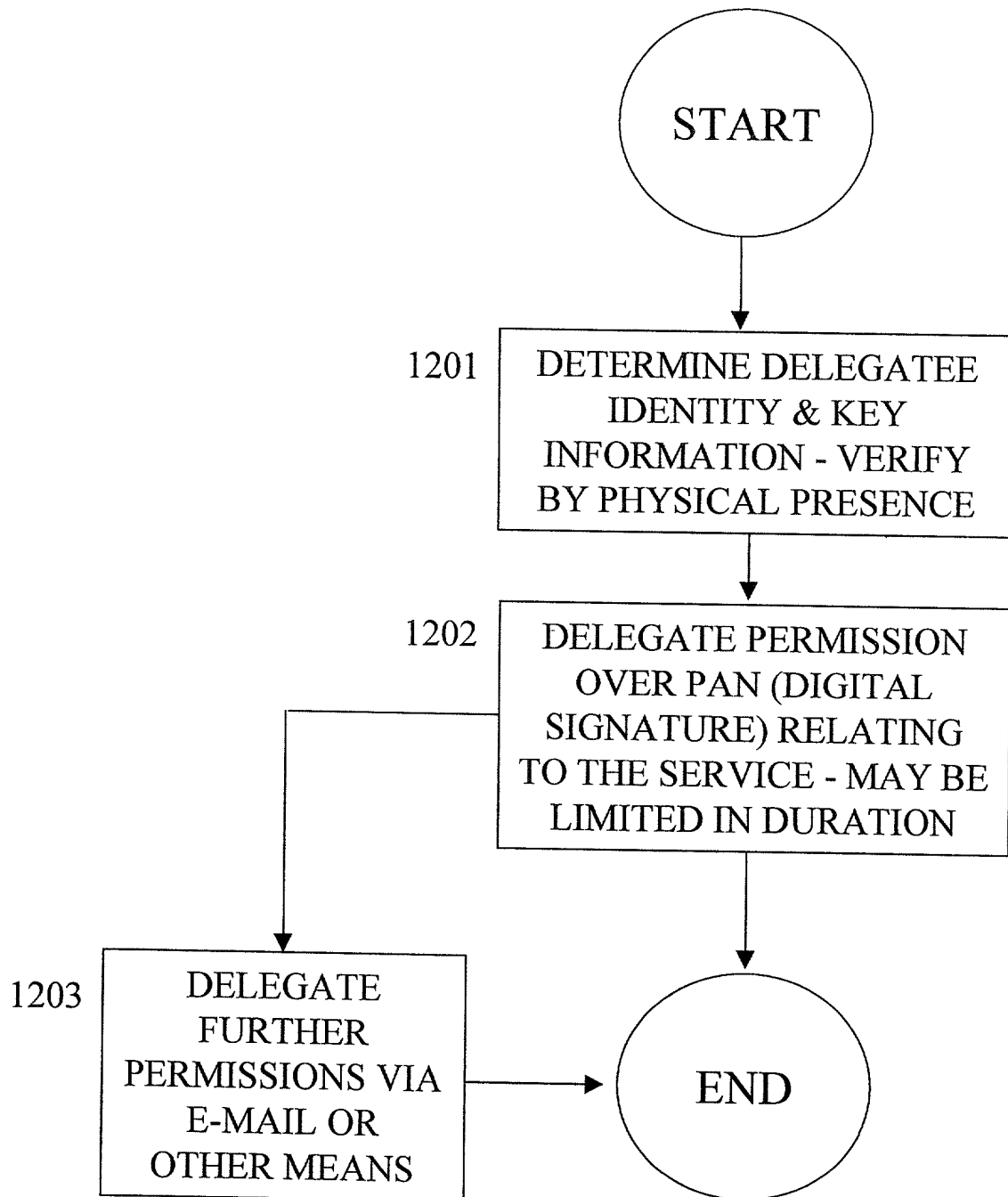


Fig. 13

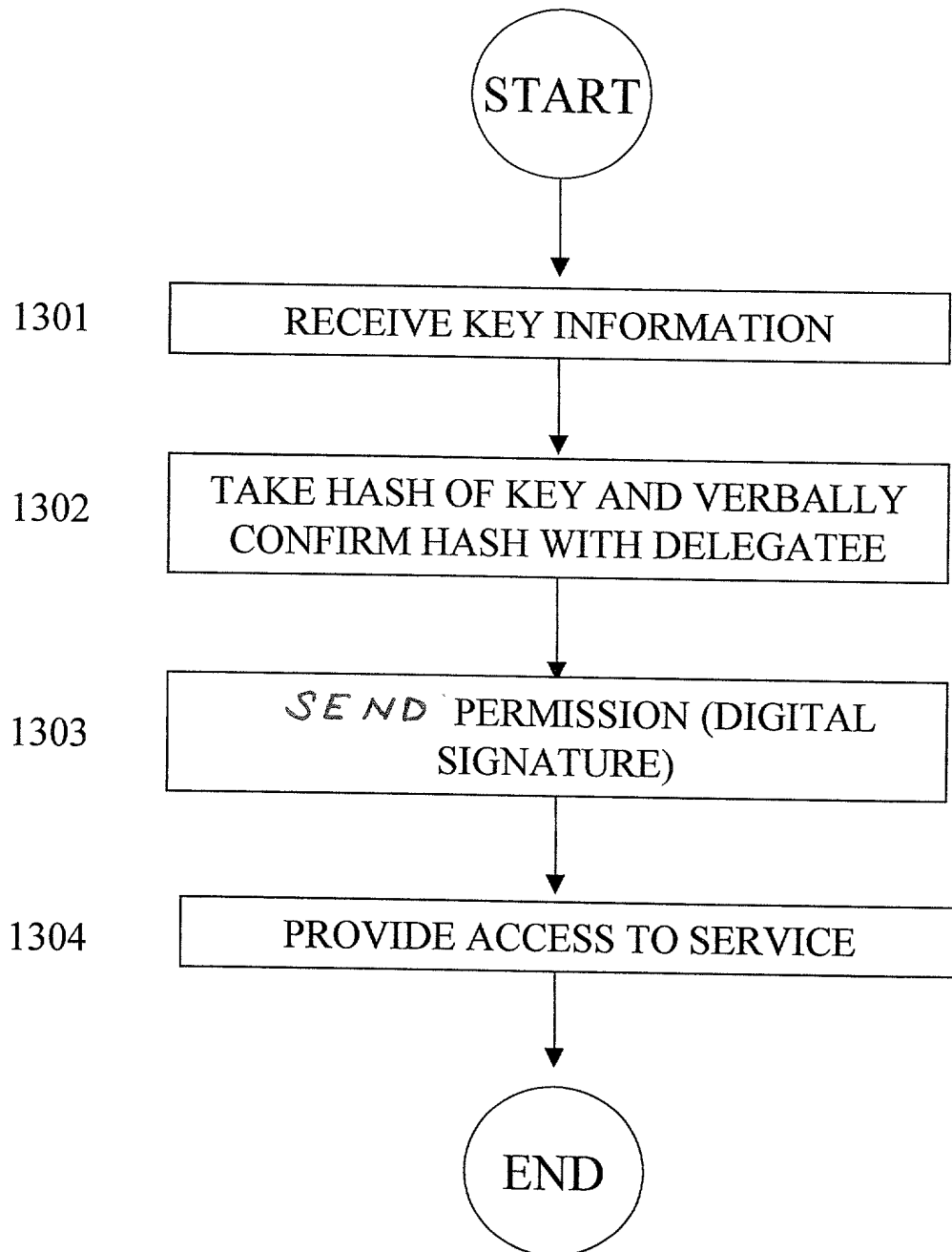


Fig. 14

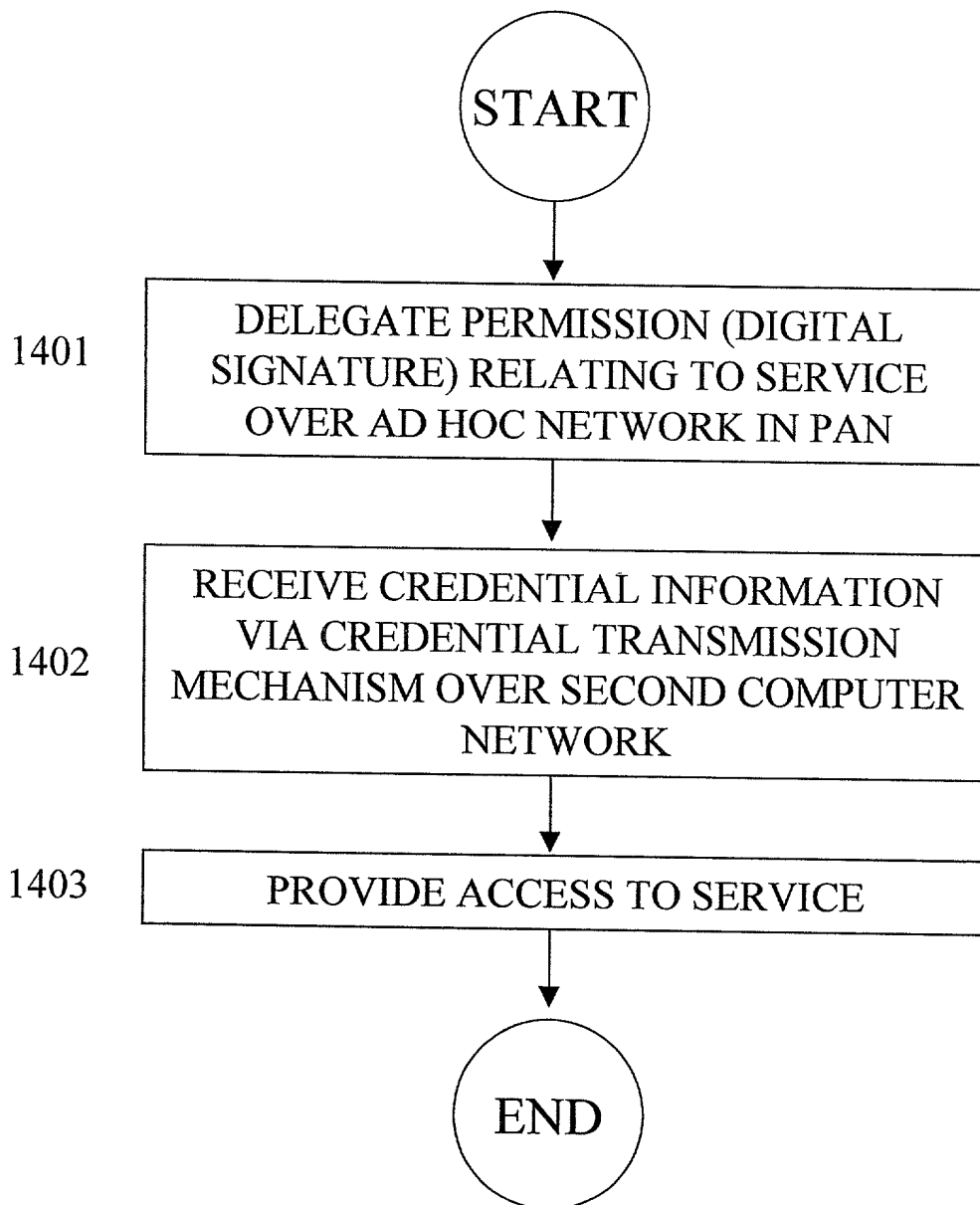


Fig. 15

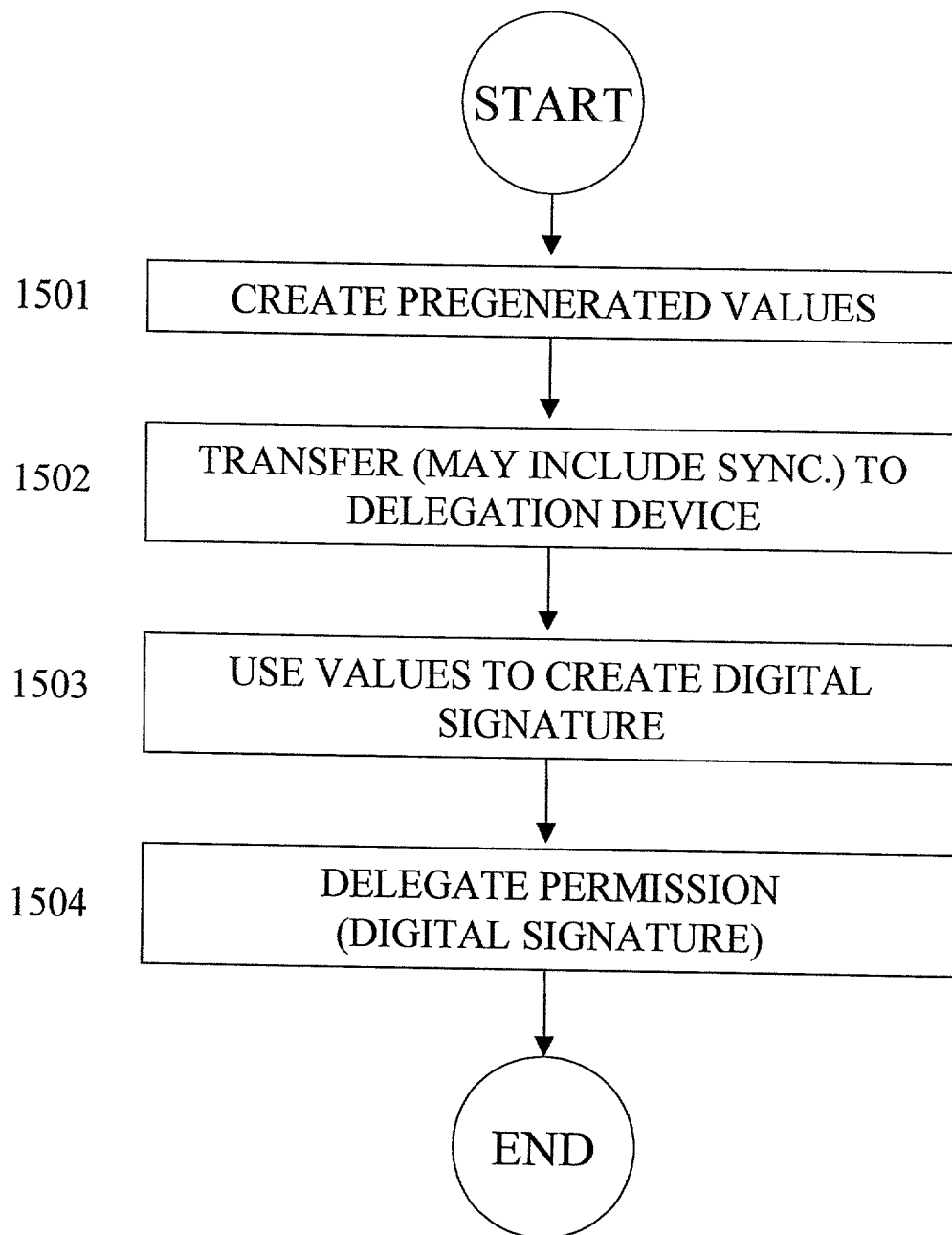


Fig. 16

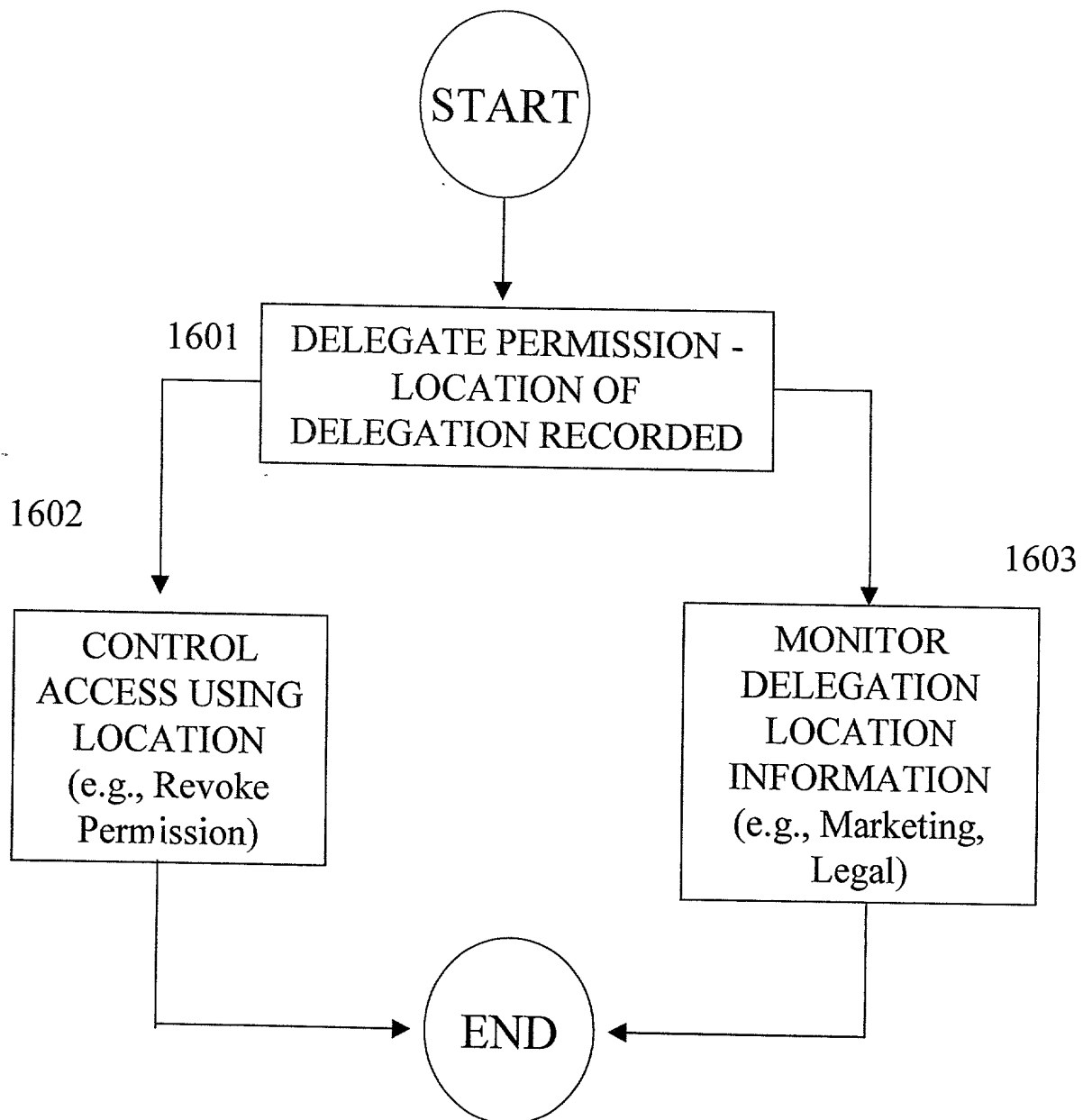


Fig. 17

